

Appl. No. 10/604,088  
Amdt. dated November 1, 2004  
Reply to Office Action of June 1, 2004

**REMARKS**

Reconsideration of the present application is respectfully requested. Claims 1-19 and 37-44 have been canceled without prejudice or disclaimer, claim 20 has been amended, and claims 45-61 have been added. Thus, claims 20-36 and 45-61 are presently pending. Claims 20, 45, and 54 are independent.

In the Office Action dated June 1, 2004, claims 1-3, 6-10, 13-15, and 37-44 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,398,767 to Warke ("the Warke '767 patent"). Claims 1-44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the Warke '767 patent in view of U.S. Patent No. 5,680,903 to Oliver ("the Oliver '903 patent"). However, Applicant suggests that none of the prior art references of record, when considered singly or in combination, show or suggest the use of the structure recited in the claims.

With respect to the claims, a turf aerator is recited in amended claim 20 as including, among other things, a crank shaft assembly and a plurality of upright tines. The crank shaft assembly includes a crank shaft having a plurality of axially spaced plates. The crank shaft further includes eccentric bars, each of which are rigidly coupled to and extend between a respective pair of adjacent plates. The plurality of upright tines each include a connection portion coupled to a respective eccentric bar and a tip portion. The tip portion is configured to cut and penetrate the turf. Furthermore, the tip portion extends radially from a respective eccentric bar. The structure recited in claim 20 enables a turf aerator to drive a plurality of ground-engaging tine elements with a minimal number of structural components. One of the significant advantages of such an aerator is

that the axially spaced plates provide a surface for rigidly coupling to the eccentric bars, thereby improving the load and wear capability of the overall crankshaft. Another advantage is that the downward force applied by the crank shaft (via a respective eccentric bar) is transmitted directly along a radial line through a respective tine element.

Claim 45 has been added and differs from original claim 20 by including axially spaced plates with opposite radially extending surfaces. The aerator further includes eccentric bars with spaced apart ends that are rigidly coupled to a respective pair of opposite surfaces. The structure recited in claim 45 enables a turf aerator to be efficiently and cost-effectively manufactured. A particular advantage of such an aerator, besides improving the load and wear capability of the crank shaft, is that the axially spaced plates have radially extending surfaces, which provide ample space for rigidly coupling the eccentric bars in a variety of locations on the surface.

Claim 54 has been added and is similar in scope to original claim 29. Claim 54 includes a tine guide positioned below the crank shaft. The tine guide includes a guide plate having a plurality of slots. The slots each receive one of the tines. The guide plate is shiftable relative to the crank shaft assembly between an aeration position and a transport position. The guide plate causes shifting of the tines when the guide plate is shifted between the aeration position and the transport position. The structure recited in claim 54 enables a turf aerator to reliably control tine position when the aerator is operating and when the aerator is being transported. An advantage of this aerator is that the guide is used to place the tines in an operating mode or in a transport mode. Yet another advantage of the aerator is that it includes a guide with a guide plate that protects the

aerator from obstructions. Furthermore, the guide is free to swing rearwardly towards a transport orientation should it run into an obstruction during operation.

With respect to the prior art references of record, the Warke '767 patent discloses an aerator having a crankshaft (16) with eccentric bars (17) (as seen in FIG. 1 and FIG. 6a). The Warke '767 patent also discloses spiking devices (12) with spaced tines (11). However, the spiking devices are connected to the crankshaft via a horizontally extending lever (18), which pivots about connection link (20).

The Warke '767 patent fails to show or suggest axially spaced plates, which are rigidly coupled to eccentric bars to provide a crank shaft. It also does not show or suggest spaced plates with opposite radially extending surfaces, where the eccentric bars are rigidly coupled to the opposing surfaces (e.g., as recited in new claim 45). The lever (18), which is referred to in the Action as a "plate," is rotationally coupled to the crankshaft (16). Therefore, the lever can not be considered to be rigidly coupled to the eccentric bars. In addition, the lever is not part of the crankshaft (16) because it does not transmit torsional forces from one eccentric bar to another eccentric bar. The crankshaft of the Warke '767 patent does not include axially spaced plates presenting opposite radially extending surfaces with eccentric bars rigidly coupled to the respective surfaces.

The Warke '767 patent also fails to show or suggest a tine with a tip portion that extends radially from a respective eccentric bar (e.g., as recited in amended claim 20). The spiking devices (12) in the Warke '767 patent are disposed at the end of a lever, which is rotatably coupled

to the crankshaft. That is, the spaced tines do not extend radially from an eccentric bar. Moreover, one effect of the mechanical lever arrangement depicted in the Warke '767 patent is that the downward force applied to the spaced tines is less than the force applied by the eccentric bars (due to the load sharing of the connection link (20)). A second effect of the mechanical lever is an assembly having a large number of parts, each of which are subject to wear and failure.

Finally, the Warke '767 patent fails to show or suggest a tine guide positioned below the crank shaft assembly (e.g., as recited in new claim 54). The aerator in the Warke '767 patent discloses spiking devices with spaced tines extending freely below the lever. Because the tines extend freely, unwanted movement of the tines is not restricted by a guide structure placed below the crank shaft. Moreover, the Warke '767 patent is deficient at showing or suggesting a guide that shifts between aeration and transport positions to thereby shift the tines..

With respect to the Oliver '903 patent, an aerator is disclosed including a driven shaft (20) connected to tine assemblies (22, 24). The tines (45) all turn about a common shaft with a common shaft axis. The Oliver '903 patent is similarly deficient in showing or suggesting the use of the structure recited in the independent claims. For example, the Oliver '903 patent fails to show or suggest axially spaced plates with eccentric bars extending between adjacent plates. The Oliver '903 patent also fails to show or suggest tines coupled to a crank shaft via eccentrically spaced bars. The use of a common shaft teaches away from the use of multiple eccentric bars with tines that are rotatably coupled thereto. An effect of the common shaft arrangement is that torsional forces are applied by the shaft to the tines. Therefore, even if the references are combined in the manner

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suggested in the Action, the proposed combination still falls short of the claimed invention.

In view of the foregoing, Applicant submits that the independent claims 20, 45, and 54 recite structure not shown or suggested in the prior art references of record. Claims 21-36 depend directly or indirectly from claim 20, claims 46-53 depend directly or indirectly from claim 45, and claims 55-61 depend directly or indirectly from claim 54. These dependent claims recite additional features of the invention not shown or suggested by the prior art.

Therefore, the present application should now be in condition for allowance and such allowance is respectfully requested. Should the Examiner have any questions, please contact the undersigned at (800) 445-3460.

A 2-month Petition for Extension of Time accompanies this Amendment, along with authorization to charge \$215.00 to the undersigned's Deposit Account No. 19-0522 for the petition fee set forth in 37 C.F.R. § 1.17. The Commissioner is further authorized to charge any additional fees associated with this communication or credit any overpayment to said Deposit Account.

Respectfully submitted,

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ATTORNEYS FOR APPLICANT

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